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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,535	03/01/2004	Michael B. Korzenski	ATMI-692	4252
24239 7590 05/16/2007 MOORE & VAN ALLEN PLLC P.O. BOX 13706 Research Triangle Park, NC 27709			EXAMINER DOUYON, LORNA M	
			ART UNIT 1751	PAPER NUMBER
			MAIL DATE 05/16/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/790,535

**Applicant(s)**

KORZENSKI ET AL.

**Examiner**

Lorna M. Douyon

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16, 18, 20-41, 43 and 45-63 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18, 20-41, 43 and 45-63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

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1. This action is responsive to the amendment filed on February 13, 2007.
2. Claims 1-16, 18, 20-41, 43, 45-63 are pending.
3. The objection to claims 11, 12, 37, 38 and 50 is withdrawn in view of Applicants' amendment.
4. Claims 1-16, 18, 20-41, 43, 45-54, 60-63 stand rejected under 35 U.S.C. 112, first paragraph, written description. Support is found for the genus "binder" and for the species of polymeric alcohol, polymeric amine, and polymeric acetate, but support is not found for "the polymeric species derived from at least one ethylenically unsaturated reactant". Compare, pp. 10 and 1, paragraph [0031] of the present specification. MPEP 2163.05, part II (Narrowing or Subgeneric Claim).
5. The rejection of claims 4, 30 and 34 under 35 U.S.C. 112, second paragraph is withdrawn in view of Applicants' amendment.
6. Claim 45 stands rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 45 lacks support for "the polymeric alcohol" with respect to claim 41 which recites "polyvinyl alcohol".

7. The rejection of claim 55 under 35 U.S.C. 102(b) as being anticipated by DeYoung et al. (US Patent No. 6,669,785), hereinafter "DeYoung" is withdrawn in view of Applicants' amendment.

8. Claims 56, 58-59 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Mullee et al. (US Patent No. 6,500,605), hereinafter "Mullee '605" in view of Hayasaki et al. (US Patent No. 7,018,481), hereinafter "Hayasaki" for the reasons set forth in the previous office action.

9. Claims 62-63 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Reid et al. (US Patent No. 6,958,123), hereinafter "Reid" for the reasons set forth in the previous office action.

10. Claim 57 stands objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims for the reasons set forth in the previous office action.

11. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeYoung et al. (US Patent No. 6,669,785), hereinafter "DeYoung 785", in view of McClain et al. (US Patent No. 6,623,355), hereinafter McClain, in further view of DeYoung et al. (US Patent No. 7,044,143), hereinafter "DeYoung '143".

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DeYoung '785 teaches a fluid composition useful for cleaning a microelectronic substrate comprising from 0.0001, 0.0005 to 5, 10 or 20 percent by weight of an adduct of hydrogen fluoride, like triethylamine trihydrofluoride (see col. 2, lines 37-40) and a Lewis base; and from 40 or 50 to 99.999 percent by weight of liquid or supercritical carbon dioxide, wherein the composition is aqueous or nonaqueous, and the composition may further comprise from 0.001 or 0.1 percent to 30 or 40 percent by weight of a cosolvent like alcohol, ethers or ketones, and/or from 0.001 to 1, 3 or 5 percent by weight of a surfactant like sulfosuccinate (see col. 2, lines 41-54; col. 5, lines 8-16 and 58). DeYoung '785, however, fails to disclose N-methylpyrrolidone (NMP) as the specific co-solvent and dioctyl sodium sulfosuccinate as the specific sulfosuccinate surfactant.

McClain, in an analogous art, teaches the equivalency of NMP with alcohols, ethers or ketones as cosolvents (see col. 8, lines 45-51).

DeYoung '143, in an analogous art, teaches sodium dioctyl sulfosuccinate, as the specific sulfosuccinate surfactant (see col. 9, lines 36-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the alcohol, ether or ketone cosolvent of DeYoung '785 with NMP because the substitution of art recognized equivalents as shown by McClain is within the level of ordinary skill in the art. It would also have been obvious to one of ordinary skill in the art at the time the invention was made to have selected sodium dioctyl sulfosuccinate surfactant as the specific sulfosuccinate because it is

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known from DeYoung '143 that said sodium dioctyl sulfosuccinate is a suitable sulfosuccinate surfactant for microelectronic substrate processing system.

### ***Response to Arguments***

Applicant's arguments filed February 13, 2007 have been considered but they are not persuasive.

With respect to the rejection under 35 USC 112, first paragraph, Applicants pointed to paragraph [0031] in the specification for support and stated there is support for the term "polymeric species" in the application as filed.

The Examiner respectfully disagrees because, as stated above, support is found for the genus "binder" and for the species of polymeric alcohol, polymeric amine, and polymeric acetate, but support is not found for "the polymeric species derived from at least one ethylenically unsaturated reactant". Compare, pp. 10 and 11 of the present specification. MPEP 2163.05, part II (Narrowing or Subgeneric Claim).

With respect to the anticipation rejection based upon DeYoung, Applicants argue that claim 55 has been amended to recite

"A composition comprising about 85.0% to about 99.0% SCCO<sub>2</sub>, about 0.01% to about 15.0% N-methylpyrrolidone (NMP), about 0.1% to about 5.0% triethylamine trihydrofluoride, and up to about 3.0% dioctyl sodium sulfosuccinate, based on the total weight of the composition, wherein said composition is useful for removing silicon-containing particulate material from the surface of a semiconductor wafer."

Applicants then argue that DeYoung does not teach or suggest the use of NMP as the co-solvent or dioctyl sodium sulfosuccinate as the surfactant.

The anticipation rejection is withdrawn in view of Applicants' amendment. It is noted, however, that the above argument in terms of amending claim 55 is not consistent with the presently amended claim 55 which deleted proportions of each of the recited ingredients.

With respect to the obviousness rejection of claims 56, 58 and 59 based upon Mullee '605 in view of Hayasaki, Applicants argue that the Examiner has incorporated two different teachings in the same reference relating to two different compositions/ steps, i.e., the second cleaning solution and the pretreatment solution, into one "pretreatment" composition, and that the foregoing compels the conclusion that the rejection is based solely on hindsight, which is impermissible.

In response to applicants' argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). As stated in the previous office action, Hayasaki teaches, in col. 26, lines 55-67, the combination of any cleaning solution such as a reducing solution, oxidizing solution (ozone water, oxygen water), weak alkali ion water, slightly acidic ion water, supercritical water, carbonated water, hydrogen water, and pure water, hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made

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to pretreat the wafers of Mullee '605 with the ozone water of Hayasaki in combination with supercritical water because this would raise the cleaning effect as taught by Hayasaki.

With respect to the obviousness rejection of claims 62-63 based upon Reid, Applicants argue that it is only the organic material that is removed with the compressed fluid in the teachings of Reid, in claim 1, not the silicon nitride, and even knowing that Reid discloses that the organic material may be deposited or removed with a compressed fluid, Reid teaches that only one type of organic material may be used at a time, as indicated by the use of "or" in claim 5 ("alkyd, acrylic, epoxy, polyxylylene, polyvinyl, polyurethane, fluorocarbon, phenolic, polyimide or silicone").

The Examiner respectfully disagrees with the above arguments because the present rejected claims are composition claims and not method claims, and Reid teaches the ingredients of the compositions which are supercritical fluid (see col. 6, lines 13-17), polymer like polyvinyls (see col. 6, line 34) and silicon nitride (see claim 26). The limitation "useful for removing silicon-containing particulate material from the surface of a semiconductor wafer" in claim 62, lines 6-7, is only an intended use and is not given patentable weight. And even though Reid does not teach the use of the composition for removing silicon-containing material, the two different intended uses are not distinguishable in terms of the composition, see *In re Thuau*, 57 USPQ 324; *Ex parte Douros*, 163 USPQ 667; and *In re Craige*, 89 USPQ 393.



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12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

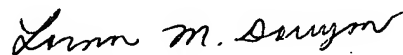
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lorna M. Douyon whose telephone number is 571-272-1313. The examiner can normally be reached on Mondays-Fridays 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on 571-272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Lorna M. Douyon  
Primary Examiner  
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